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APPEAL BRIEF FEE TRANSMITTAL

Attorney Docket No.	1761.1001
Application Number	09/944,589
Filing Date	September 4, 2001
First Named Inventor	Takayuki NORIMATSU
Group Art Unit	3682
Examiner Name	William C. Joyce

AMOUNT ENCLOSED	500.00

FEE CALCULATION (fees effective 12/08/04)

CLAIMS AS AMENDED	Claims Remaining After Amendment	Highest Number Previously Paid For		Number Extra	Rate	Calculations
TOTAL CLAIMS		-	=	0	X $ 50.00 =	$ 0.00
INDEPENDENT CLAIMS		-	=	0	X $ 200.00 =	0.00

Since the Appeal Brief was due August 28, 2005, petition is hereby made for an extension to cover the date this reply is filed for which the requisite fee is enclosed (1 month ($120)); (2 months ($450)); (3 months ($1,020)); (4 months ($1,590)); (5 months ($2,160):	
Appeal Brief Fee ($500.00)	500.00
If Statutory Disclaimer under Rule 20(d) is enclosed, add fee ($130.00)	
Information Disclosure Statement (Rule 1.17(p)) ($180.00)	
Total of above Calculations =	$ 500.00
Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28)	
TOTAL FEES DUE =	$ 500.00

(1) If entry (1) is less than entry (2), entry (3) is "0".
(2) If entry (2) is less than 20, change entry (2) to "20".
(4) If entry (4) is less than entry (5), entry (6) is "0".
(5) If entry (5) is less than 3, change entry (5) to "3".

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☒ The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STAAS & HALSEY LLP

Typed Name	Michael A. Bush	Reg. No.	48,893
Signature	Michael A. Bush	Date	August 29, 2005

Attorney Docket No. 1761.1001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Takayuki NORIMATSU

Application No.: 09/944,589 Group Art Unit: 3682

Filed: September 4, 2001 Examiner: William C. Joyce

For: WHEEL BEARING ASSEMBLY

APPEAL BRIEF UNDER 37 CFR § 41.37

Commissioner for Patents
Board of Patent Appeals and Interferences
United States Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the Appellant's earlier filed Notice of Appeal on June 28, 2005, the Appellant appealed the Examiner's March 28, 2005 Office Action finally rejecting claims 1-12. Appellant's Brief together with the requisite fees set forth in 37 CFR § 1.17 is submitted herewith.

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Table of Contents

I. Real Party in Interest (37 CFR §41.37(c)(1)(i))

The real party in interest is NTN Corporation, the assignee of the subject application.

II. Related Appeals and Interferences (37 CFR §41.37(c)(1)(ii))

The Appellant and the undersigned representative are not aware of any other appeals or interferences that will directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal.

III. Status of Claims (37 CFR §41.37(c)(1)(iii))

Claims 1, 11, and 12 are independent claims, and claims 2-10 are dependent claims.

In view of the final Office Action mailed March 28, 2005, claims 1-12 stand finally rejected, and are the subject of this appeal.

IV. Status of Amendments (37 CFR §41.37(c)(1)(iv))

All amendments filed have been entered, and no amendments have been filed since the final Office Action mailed March 28, 2005.

V. Summary of Claimed Subject Matter (37 CFR §41.37(c)(1)(v))

Pursuant to 37 C.F.R. §1.192(c)(5), the presently claimed invention is directed to:

independent claim 1, which recites: "1. A wheel bearing assembly which comprises: an inner member; an outer member; at least one circumferential row of rolling elements rollingly interposed between the inner and outer members; a sealing device sealing an annular end space defined between the inner and outer members (e.g., p. 7, lines 6-10); and a magnetized encoder mounted on one of the inner and outer members which serves as a rotary member (e.g., p. 8, line 26 – p. 9, line 3) and including an elastic member made of a base material mixed with a powder of magnetic material (e.g., p. 11, lines 3-6), said elastic member being bonded by vulcanization (e.g., p. 9, line 2) to the magnetized encoder and having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member (e.g., p. 9, lines 5-6); wherein under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetic sensor: Single pitch deviation: ± 2% or less and Magnetic flux density: ± 3 mT or higher (e.g., p. 11, lines 9-15);"

independent claim 11, which recites: "11. An elastic member of a magnetized encoder disposed on a rotary member of a wheel bearing assembly (e.g., p. 8, line 26 – p. 9, line 1), comprising: a base material; and a powder of magnetic material (e.g., p. 11, lines 3-6), said elastic member having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member (e.g., p. 9, lines 5-6), wherein under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetic sensor: Single pitch deviation: ± 2% or less, and Magnetic flux density: ± 3 mT or higher (e.g., p. 11, lines 9-15);" and

independent claim 12, which recites: "12. A magnetized encoder disposed on a rotary member of a wheel bearing assembly (e.g., p. 8, line 26 – p. 9, line 3), that when measured at a distance of 2.0 mm, retains a single pitch deviation less than or equal to ± 2%, and a magnetic flux density greater than or equal to ± 3 mT, after undergoing a

thermal endurance test in which the magnetized encoder is subjected to 1,000 thermal cycles of being heated at 120°C for one hour followed by cooling at -40°C for one hour (e.g., p. 11, lines 9-15)."

VI. Grounds Of Rejection To Be Reviewed On Appeal (37 CFR §41.37(c)(1)(vi))

The grounds of rejection for review are:

(A) claims 1-12 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement; and

(B) alternately, claims 1-12 under 35 U.S.C. §103(a) as being unpatentable over Alff (US 5,622,437) in view of Appellant's prior art admission (filed 3/18/04) based on the handbook entitled "Knack of Selecting Magnetic Material."

VII. Argument Of Each Ground Of Rejection Presented For Review (37 CFR §41.37(c)(1)(vii))

A. Rejection of claims 1-12 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement

In the Final Office Action mailed March 28, 2005, at page 2, item 2, the Examiner rejected claims 1-12 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement.

Appellant respectfully submits that the following presents new arguments as well as arguments based on those presented in the Response filed December 20, 2004.

The Examiner erred in not providing sufficient evidence or reasoning to support a determination that the disclosure does not satisfy the enablement requirement, and that any necessary experimentation is undue. Further, the Examiner erred in not providing sufficient reasoning or evidence to cast doubt on the truth or the accuracy of Appellant's Rule 132 Declaration submitted March 18, 2004 (hereinafter the "Declaration").

In the Declaration, Appellant asserted that if provided with the information provided in the subject application, particularly the potential materials of which the encoder is made (The elastic material is made of a material containing rubber as a base material, for example, a heat resistant nitrile rubber, acrylic rubber or fluorine containing rubber, mixed with a powder of magnetic material. For the powder of magnetic material, ferrite may be employed.), and the resulting properties of the encoder (under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetic sensor: Single pitch deviation: ± 2% or less and Magnetic flux density: ± 3 mT or higher.), one of ordinary skill in the art would be able to achieve an encoder having a mixing ratio of approximately 85-90% wt% magnetic material, and 10-15% wt% elastic member without undue experimentation, as evidenced by the submitted translation of the handbook, "Knack of Selecting Magnetic Material" (hereinafter the "Handbook"). (Declaration, item 3).

The Handbook describes that a bonded magnet is known to be obtainable by mixing a magnetic material with a bond, such as rubber, contained within the range of 2-15% wt%. (Declaration, item 3).

In the Final Office Action, the Examiner again asserts: "[I]t is not entirely clear applicant had possession of the claimed device because the disclosure fails to clearly identify a specific example of materials and mixing ratios thereof in forming the encoder so as to obtain the claimed a single pitch deviation and magnetic flux density. Accordingly, one in the art could not produce the claimed invention without undue experimentation." (Emphasis added).

The Examiner further asserts that "[t]he mere suggestion that an encoder can be formed with the claimed properties by mixing a number of recited materials is not sufficient because, for example, each combination of materials used in making the encoder may have a specific mixing ratio which may be difficult to reproduce by one in the art. Since applicant has not clearly disclosed the mixing ratio and materials needed in obtaining the claimed encoder, it would be difficult for one in the art to make the claimed encoder member without undue experimentation." (Emphasis added).

Appellant respectfully submits that this is not the proper standard for determining enablement. As noted in the MPEP, "[t]he test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue." (MPEP 2164.01 – referring to In re Angstadt, 537 F. 2d 498, 504, 190 USPQ 214, 219 (CCPA 1976)).

As noted in several prior responses, the first full paragraph of page 11 of the subject application explicitly discloses an example of both an elastic material and a magnetic material.

> "The elastic material is made of a material containing rubber as a base material, for example, a heat resistant nitrile rubber, acrylic rubber or fluorine containing rubber, mixed with a powder of magnetic material. For the powder of magnetic material, ferrite may be employed."

In addition, on page 14 of the subject application, non-limiting embodiments of the invention are disclosed that utilize heat resistant nitrile rubber, acrylic rubber, or fluorine containing rubber. Appellant respectfully submits that specific examples of materials are disclosed in the specification.

Thus, the Examiner appears to base the legal conclusion that one in the art could not produce the claimed invention without undue experimentation solely on the fact that the subject application fails to clearly identify specific examples of mixing ratios.

Appellant respectfully submits that this is improper. As the MPEP notes, "[t]here are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is 'undue.' These factors include, but are not limited to: (A) The breadth of the claims; (B) The nature of the invention; (C) The state of the prior art; (D) The level of one of ordinary skill; (E) The level of predictability in the art; (F) The amount of direction provided by the inventor; (G) The existence of working examples; and (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure." (MPEP 2164.01(a) – referring to In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)).

Further, the MPEP states that "[i]t is improper to conclude that a disclosure is not enabling based on an analysis of only one of the above factors while ignoring one or more of the others. The examiner's analysis must consider all the evidence related to each of these factors, and any conclusion of nonenablement must be based on the evidence as a whole." (MPEP 2164.01(a) – referring to In re Wands 858 F.2d at 737, 740, 8 USPQ2d at 1404, 1407).

Appellant claims a wheel bearing assembly, an elastic member of a magnetized encoder disposed on a rotary member of a wheel bearing assembly, and a magnetized encoder disposed on a rotary member of a wheel bearing assembly, in which the magnetized encoder exhibits specific qualities after undergoing a specific thermal endurance test.

Appellant respectfully submits that since the subject application discloses starting materials (e.g. the first full paragraph of page 11) for the claimed encoder, details of the specific thermal endurance test (e.g., p. 11, lines 9-11, and p. 12, lines 10-29), and test results (specific qualities of the encoder – e.g., p. 11, lines 13-15, and p. 13, line 16 to p. 14, line 8), enablement is commensurate with the scope of the claims.

MPEP 2164.06 recites: "[A]n extended period of experimentation may not be undue if the skilled artisan is given sufficient direction or guidance." In re Colianni, 561 F.2d 220, 224, 195 USPQ 150, 153 (CCPA 1977). " 'The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed.' " In re Wands, 858 F.2d 731,

737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) (citing In re Angstadt, 537 F.2d 489, 502-04, 190 USPQ 214, 217-19 (CCPA 1976)).

In the Declaration, Appellant submitted that the Handbook describes that a bonded magnet is known to be obtainable by mixing a magnetic material with a bond, such as rubber, contained within the range of 2-15% wt%. (Declaration, item 3).

Additionally, in discussing prior art, the subject application notes Japanese Laid-open Patent Publication No. 6-281018 (which was submitted in an Information Disclosure Statement and considered by the Examiner on January 30, 2003), which discloses a magnetized encoder for a wheel bearing assembly prepared from a bonded magnet in which poles of opposite polarities are formed alternately in a direction circumferentially thereof. (See subject application, at page 1, lines 24-29).

Accordingly, Appellant respectfully submits that since the subject application discloses starting materials for the claimed encoder, details of the specific thermal endurance test, and test results, the subject application provides significant direction to one of ordinary skill in the art, and provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed.

Further, Appellant respectfully submits that the subject application provides evidence of a working example (p. 13, line 23 to p. 14, line 5).

In response to submission of the Declaration, the Examiner misstates and mischaracterizes the assertions of the Declaration. The Examiner states that the Declaration states "one of ordinary skill in the ad (*sic*) would be able to achieve an encoder having a mixing ratio of approximately 85-90% wt% magnetic material, and 10-15% wt% elastic member without undue experimentation because of the teaching found in" the Handbook. This statement is incorrect.

The Declaration states that if supplied with the information disclosed in the subject application, particularly the potential materials of which the encoder is made, and the resulting properties of the encoder, one of ordinary skill in the art would have been able to achieve an encoder for a rotary member of a wheel bearing assembly having a mixing ratio of approximately 85-90% wt% magnetic material, and 10-15% wt% elastic member without undue experimentation. (Emphasis added).

The Examiner proceeds to state that Appellant's argument based on the Declaration was not persuasive because "the submitted partial translation... of the above

noted handbook does not appear to be directed to a wheel bearing assembly, or an encoder having a series of magnetic poles of opposite polarities."

But as previously noted, the partial translation of the Handbook is directed to bonded magnets. Additionally, the Declaration states that the bonded magnet described in the Handbook is "similar to the rubber magnet forming the magnetized encoder of the subject application." (Declaration, item 3).

Also previously noted, the subject application notes Japanese Laid-open Patent Publication No. 6-281018, which discloses a magnetized encoder for a wheel bearing assembly prepared from a bonded magnet in which poles of opposite polarities are formed alternately in a direction circumferentially thereof. (See subject application, at page 1, lines 24-29).

As such, it appears that the Examiner appears merely to doubt the truth or accuracy of the Declaration.

MPEP 2164.04 states "A specification disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as being in compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, unless there is a reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support." In support of this statement, the MPEP quotes In re Marzocchi, "it is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain *why* it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement." In re Marzocchi, 439 F.2d 220, 224, 169 USPQ 367, 370.

Appellant respectfully submits that the same standard should be applied to supporting declarations.

Additionally, Appellant respectfully submits that the Examiner has not provided sufficient reasoning or evidence to cast doubt on the truth or the accuracy of the Declaration.

Further, Appellant respectfully submits that Examiner has not provided sufficient evidence or reasoning to overcome the above-noted assertions, and thus, the Examiner has not provided sufficient evidence or reasoning to support a determination that the

disclosure does not satisfy the enablement requirement and that any necessary experimentation is undue.

B. Alternative rejection of claims 1-12 under 35 U.S.C. §103(a) as being unpatentable over Alff (U.S. Patent No. 5,622,437) in view of Appellant's prior art admission (filed 3/18/04 – hereinafter the Declaration) based on the handbook entitled "Knack of Selecting Magnetic Material" (hereinafter the Handbook).

In the Final Office Action, at page 4, item 4, the Examiner alternately rejected claims 1-12 under 35 U.S.C. §103(a) as being unpatentable over Alff (U.S. Patent No. 5,622,437 – hereinafter Alff) in view of applicant's admitted prior art submission based on the Handbook.

Appellant respectfully submits that the following presents new arguments as well as arguments based on those presented in the Response filed December 20, 2004.

The Examiner erred by failing to provide evidence that the individual elements exist in the prior art. Additionally, the Examiner erred by failing to provide evidence of a motivation that existed in the prior art and which would have motivated one of ordinary skill in the art to make the combination in the manner set forth in the office action.

Initially, the Examiner misstates and mischaracterizes the assertions of the Declaration. The Examiner states: "[g]iven applicant's admission that one of ordinary skill in the art would be able to achieve an encoder having the claimed properties based on the teachings of the" Handbook, "an alternative rejection is given below."

Additionally, the Examiner states that the Declaration states "one of ordinary skill in the art would be able to achieve an encoder having a mixing ratio of approximately 85-90% wt% magnetic material, and 10-15% wt% elastic member without undue experimentation because of the teaching found in" the Handbook.

These statements are incorrect.

The Declaration states that <u>if supplied with the information disclosed in the subject application,</u> one of ordinary skill in the art would have been able to achieve an encoder for a rotary member of a wheel bearing assembly having a mixing ratio of approximately 85-90% wt% magnetic material, and 10-15% wt% elastic member without undue experimentation. (Emphasis added).

The Handbook describes that a bonded magnet is known to be obtainable by mixing a magnetic material with a bond, such as rubber, contained within the range of 2-15% wt%. (Declaration, item 3).

But the fact that one of ordinary skill in the art would be capable of practicing the invention if given the subject application does not mean that it would have been obvious for one of ordinary skill in the art to do so without the subject application.

As a general matter, to establish a prima facie obviousness rejection, the Examiner needs to provide evidence of the existence of individual elements corresponding to the recited limitations, a motivation to combine the individual elements to create the recited invention, and a reasonable expectation of success. (See MPEP, at 2143. – "'[t]he teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.' In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).", and at 2143.03 – "'[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.' In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).").

1. The Examiner erred by failing to provide evidence that the individual elements exist in the prior art.

    a. Independent claims 1, 11, and 12

Alff discloses a rolling element bearing 2 with a sealing member to seal an annular space between fixed ring 21 and moveable ring 23, and a coding element 7 mounted to moveable ring 23. Additionally, Alff discloses that such a sealing device with an integrated coding device is described in U.S. Patent 5,431,413 (hereinafter Hajzler) (See Alff, at col. 2, lines 27-37).

Hajzler discloses that one side of disk 2 is covered with an elastomer loaded with magnetic particles, the combination of which is designated as encoder element 4. (See Hajzler, at col. 2, lines 6-9).

Neither Hajzler nor Alff disclose an elastic having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member, as claimed in independent claims 1 and 11.

Additionally, neither Hajzler nor Alff disclose the claimed thermal endurance test conditions or the claimed properties of the magnetized encoder as claimed in independent claims 1, 11, and 12.

The Handbook fails to cure these defects.

Accordingly, Appellant respectfully submits that the Examiner has failed to provide evidence that the individual elements exist in the prior art, and thus, the Examiner has not provided sufficient evidence to maintain a prima facie obviousness rejection of the claims.

b. Dependent claim 8

Additionally, claim 8 recites: "...wherein an outer end of said cylindrical portion of said second sealing plate has a wall thickness smaller than a remaining part of said cylindrical portion of said second sealing plate, said outer end being bent radially inward."

In claim 5, from which claim 8 depends, the first sealing plate is defined as being mounted on the one of the inner and outer members serving as the rotary member. And the second sealing plate is defined as being fitted to the inner or outer member "different from" the inner or outer member that the first sealing plate is fitted to. In other words, the second sealing plate is fitted to the one of the inner and outer members serving as the non-rotary member.

Appellant respectfully submits neither Alff nor Hajzler disclose or suggest that "...an outer end of said cylindrical portion of said second sealing plate has a wall thickness smaller than a remaining part of said cylindrical portion of said second sealing plate..."

Additionally, Appellant respectfully submits that neither Alff nor Hajzler disclose or suggest that the outer end is "...bent radially inward."

The Handbook fails to cure these defects.

Accordingly, Appellant respectfully submits that the Examiner has failed to provide evidence that the individual elements exist in the prior art, and thus, the Examiner has not provided sufficient evidence to maintain a prima facie obviousness rejection of the claims.

2. The Examiner erred by failing to provide evidence of a motivation that existed in the prior art and which would have motivated one of ordinary skill in the art to make the combination in the manner set forth in the office action.

Should the Examiner fail to provide evidence that the individual elements exist in the prior art, or that the motivation exists in the prior art or in the knowledge generally available to one of ordinary skill in the art, then the Examiner has not provided sufficient evidence to maintain a prima facie obviousness rejection of the claim. (See MPEP, at 2143.03, and 2143.01). Thus, the burden is initially on the Examiner to provide evidence as to why one of ordinary skill in the art would have been motivated to combine the individual elements to create the recited invention, and to demonstrate that this evidence existed in the prior art or in the knowledge generally available to one of ordinary skill in the art. (MPEP 2143.01).

The Examiner states that the motivation to combine Alff and the Handbook would be to form a magnetic member having high dimensional precision. There is no indication that the encoder in Allf or Hajzler either possesses or lacks high dimensional precision. Further, there is no basis to assert that the encoder in Alff or Hajzler either is or is not already within the range specified in the handbook.

In other words, Alff and Hajzler are silent as to the disclosed encoder's dimensional precision and the range of magnetic material vs. elastic material, except that Hajzler discloses that the elastomer is "loaded with magnetic particles." (See Hajzler, at col. 2, lines 6-9).

Accordingly, Appellant respectfully submits that there is no basis to assert that one of ordinary skill in the art would be motivated to combine the teachings as asserted by the Examiner, since there is no basis to assert that such a combination would result in a magnetic member having high dimensional precision.

As such, Appellant respectfully submits that there is insufficient evidence of a motivation that existed in the prior art and which would have motivated one of ordinary skill in the art to make the combination in the manner set forth in the office action.

Accordingly, Appellant respectfully submits that the Examiner has failed to provide evidence that the motivation to combine the references as suggested by the Examiner exists in the prior art or in the knowledge generally available to one of ordinary

skill in the art, and thus, the Examiner has not provided sufficient evidence to maintain a prima facie obviousness rejection of the claims.

Moreover, the Examiner simply uses the Appellant's present invention as the recipe and the motivation for achieving the claimed encoder. This is improper hindsight analysis. As stated in the MPEP, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." (MPEP 2143.01 – referring to In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)).

Even though, as previously noted, the subject application notes Japanese Laid-open Patent Publication No. 6-281018, which discloses a magnetized encoder for a wheel bearing assembly prepared from a bonded magnet in which poles of opposite polarities are formed alternately in a direction circumferentially thereof (See subject application, at page 1, lines 24-29), the present invention has unexpected advantages in that the specific properties can be obtained for the first time by the combination of a circumferentially magnetized member with the specific mixing ratio of magnetic material and elastic material. Since Alff, Hajzler, and the handbook (as well as Japanese Laid-open Patent Publication No. 6-281018) are silent about such properties, it is apparent that the claimed invention is not a mere aggregation of Alff, Hajzler, and the Handbook.

Appellant respectfully submits that independent claims 1, 11, and 12 patentably distinguish over the cited art, and should be allowable for at least the above-mentioned reasons.

MPEP 2143.03 cites: "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Accordingly, Appellant respectfully submits that claims 2-10, which ultimately depend from independent claim 1, should be allowable for at least the same reasons as claim 1, as well as for the additional features recited therein.

VIII. Conclusion:

In view of the law and facts stated herein, the Appellant respectfully submits that reasoning and the references cited by the Examiner are insufficient to maintain either a non-enablement rejection or an obviousness rejection of the claims. Appellant respectfully urges that both the rejection of claims 1-12 under 35 U.S.C. §112, first paragraph and the alternative rejection of claims 1-12 under 35 U.S.C. §103(a) are improper. Reversal of the rejections in this appeal is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees required in connection with the filing of the Appeal Brief to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 29 AUG 2005

By: Michael A. Bush

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IX. Claims Appendix (37 CFR § 41.37(c)(1)(viii))

1. (Previously Presented) A wheel bearing assembly which comprises:

an inner member;

an outer member;

at least one circumferential row of rolling elements rollingly interposed between the inner and outer members;

a sealing device sealing an annular end space defined between the inner and outer members; and

a magnetized encoder mounted on one of the inner and outer members which serves as a rotary member and including an elastic member made of a base material mixed with a powder of magnetic material, said elastic member being bonded by vulcanization to the magnetized encoder and having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member;

wherein under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetic sensor:

Single pitch deviation: ± 2% or less and

Magnetic flux density: ± 3 mT or higher.

2. (Original) The wheel bearing assembly as claimed in Claim 1, wherein the single pitch deviation within that range and the magnetic flux density within that range are obtained by selecting materials for the base material of the elastic member, and for the powder of the magnetic material, and/or adjusting a mixing ratio of the magnetic material to the base material (wt%).

3. (Original) The wheel bearing assembly as claimed in Claim 1, wherein the magnetized encoder forms the sealing device.

4. (Original) The wheel bearing assembly as claimed in Claim 3, wherein the magnetized encoder has a generally L-shaped section including a cylindrical portion mounted on the rotary member and a radial upright portion extending radially outwardly from the cylindrical portion, said radial upright portion having a radial outer edge spaced a slight distance from the other of the inner and outer members which serves as a stationary member.

5. (Previously Presented) The wheel bearing assembly as claimed in Claim 3, wherein the sealing device includes first and second annular sealing plates fitted to members of the inner and outer members that are different from each other;

wherein said first and second annular sealing plates are of a generally L-shaped section each including a cylindrical portion and a radial upright portion and confront with each other, wherein the first sealing plate is mounted on one of the inner and outer members which serves as the rotary member with the radial upright portion thereof positioned on an outer side of the bearing assembly;

wherein said elastic member mixed with the powder of the magnetic material is bonded by vulcanization to the radial upright portion of the first sealing plate and has the alternating magnetic poles of the opposite polarities defined therein in the direction circumferentially thereof;

wherein the second sealing plate is provided with a side lip slidingly engaged with the radial upright portion of the first sealing plate and a radial lip slidingly engaged with the cylindrical portion of the first sealing plate; and

wherein the radial upright portion of the first sealing plate has a radial outer edge spaced a slight distance radially from the cylindrical portion of the second sealing plate.

6. (Original) The wheel bearing assembly as claimed in Claim 1, wherein the elastic member is made of a heat resistant nitrile rubber.

7. (Previously Presented) The wheel bearing assembly of claim 5, wherein said elastic member has an end cover portion formed integrally therewith and adapted to cover a radially outer edge portion of said radial upright portion of said first sealing plate.

8. (Previously Presented) The wheel bearing assembly of claim 5, wherein an outer end of said cylindrical portion of said second sealing plate has a wall thickness smaller than a remaining part of said cylindrical portion of said second sealing plate, said outer end being bent radially inward.

9. (Previously Presented) The wheel bearing assembly of claim 6, wherein said magnetic material is made of ferrite.

10. (Previously Presented) The wheel bearing assembly as claimed in claim 1, wherein the elastic member is made of one of acrylic rubber and fluorine containing rubber

11. (Previously Presented) An elastic member of a magnetized encoder disposed on a rotary member of a wheel bearing assembly, comprising:

a base material; and

a powder of magnetic material, said elastic member having a series of alternating magnetic poles of opposite polarities formed in a direction circumferentially of the rotary member,

wherein under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetic sensor:

Single pitch deviation: ± 2% or less, and

Magnetic flux density: ± 3 mT or higher.

12. (Previously Presented) A magnetized encoder disposed on a rotary member of a wheel bearing assembly, that when measured at a distance of 2.0 mm, retains a single pitch deviation less than or equal to ± 2%, and a magnetic flux density greater than or equal to ± 3 mT, after undergoing a thermal endurance test in which the magnetized encoder is subjected to 1,000 thermal cycles of being heated at 120°C for one hour followed by cooling at -40°C for one hour.

X. Evidence Appendix (37 CFR § 41.37(c)(2))

Appellant's Declaration under 37 C.F.R. 1.132 was submitted on March 18, 2004, and was acknowledged in the Office Action mailed July 20, 2004.

A copy of the Declaration, the submitted portions fo the Handbook, and the translation thereof, are provided.

COPY

Docket No.: 1761.1001

DECLARATION UNDER 37 C.F.R. 1.132
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Takayuki NORIMATSU

Serial No. 09/944,589 Group Art Unit: 3682

Confirmation No. 1652

Filed: September 4, 2001 Examiner: William C. JOYCE

For: WHEEL BEARING ASSEMBLY

Declaration Under Rule 132

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I , Takayuki NORIMATSU, declare as follows:

1. I have a degree in Production Systems Engineering from Toyohashi University of Engineering and have 6 years of experience in the field of Wheel Bearing and am aware of the state of the art prior to September 5, 2000.

2. I have reviewed and understand the disclosure of U.S. Application serial number 09/944,589, the cited references, the claims, and the arguments set forth in the U.S. patent Office Action dated June 20, 2003;

3. If provided with the information provided in U.S. patent application 09/944,589, particularly the potential materials of which the encoder is made

(The elastic material is made of a material containing rubber as a base material, for example, a heat resistant nitrile rubber, acrylic rubber or fluorine containing rubber, mixed with a powder of magnetic material. For the powder of magnetic material, ferrite may be employed.),

and the resulting properties of the encoder

(under a thermal endurance test condition in which the magnetized encoder is subjected to 1,000 thermal cycles each consisting of heating at 120°C for one hour followed by cooling at -40°C for one hour, the magnetized encoder retains the following initial magnetic characteristics when measured at a point 2.0 mm distant from a magnetic sensor: Single pitch deviation: ± 2% or less and Magnetic flux density: ± 3 mT or higher.),

one of ordinary skill in the art would be able to achieve an encoder having a mixing ratio of approximately 85-90% wt% magnetic material, and 10-15% wt% elastic member) without undue experimentation for the following reason:

Appendix A, a handbook entitled "Knack of Selecting Magnetic Material", page 45, lines 7-13, describes that a bonded magnet is known to be

obtainable by mixing a magnetic material with a bond, such as a rubber, contained within the range 2 to 15 wt%. The bonded magnet is similar to the rubber magnet forming the magnetized encoder of the subject application.

4. In view of the foregoing, I do not agree with the rejection of the claims set forth specifically in the U.S. patent Office Action dated June 20, 2003, at page 2, numbered paragraph 2.

The Declarant further states that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

By: Takayuki Norimatsu Date Mar. 12, 2004

Takayuki NORIMATSU

Translation of Extract of Appendix A

Knack of Selecting Magnetic Material

Series of books on how to use the JIS standard
Editor in Chief: Keizo Ohta

Published Nov. 10, 1989
Japanese Standards Association

Page 45, lines 7-13

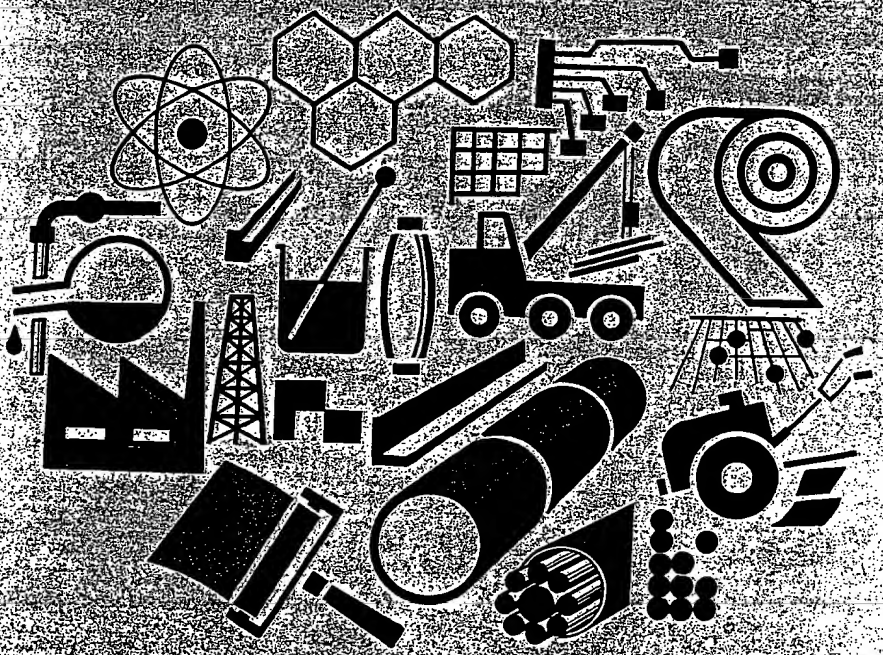
The bonded magnet is of a kind prepared by molding a mixture of a powder of hard magnetic material with a bond such as, for example, plastics or rubber and may be classified depending on the kind of the bond and that of the powder of the hard magnetic material. As discussed previously, the bonded magnet can be made with high dimensional precision and can easily be processed subsequently. However, since the bonded magnet contains the bond of a non-magnetic material in a quantity within the range of 2 to 15 wt% (or 25 to 50 vol.%), it tend to exhibit an inferior magnetic characteristic as compared with the cast magnet and the sintered magnet. The IEC Publication 404-8-1 Standards stipulates the Alnico magnet, rare earth magnet and ferrite magnet.

Appendix A

JIS 使い方シリーズ

磁性材料選択のポイント

編集委員長 太田恵造



日本規格協会

磁性材料選択のポイント
日本規格協会

最終に所定の寸法公差に入れるために研削仕上げが施されるのが普通である。この結果，寸法公差が厳しく要求される用途に対して加工コストが高価になり，ひいては製品コストの著しい上昇を招くことになる。また，複雑な形状や薄肉品を作りにくく，これらの加工上の欠点を改善して使用されはじめたのがボンド磁石であるが，磁気エネルギーはかなり犠牲にされているので，既述の¥/J のコストを見合いにして材料選択を図らねばならない。

ボンド磁石は，硬質磁性材料粉末をプラスチックやゴムなどの粘結剤と混合した上で成型されたもので，この粘結剤と硬質磁性材料粉末の種類によって分類されている。ボンド磁石は前述したように，寸法精度は高くなり，その後加工も容易となるが，その反面，非磁性物質の粘結剤を 2～15 wt%（容積%にすると 25～50%）含むことになるので，鋳造磁石や焼結磁石に比べて劣った磁気特性を示す。IEC Publication 404－8－1 規格ではアルニコ磁石，希土類磁石及びフェライト磁石について規定されている(表 2.1.7, 表 2.1.9)。

2.2 硬質磁性材料の用途と選択のポイント

2.2.1 *B-H* 減磁曲線と動作点

硬質磁性材料は普通単体で用いられる場合は極めて少なく，通常は軟質磁性材料，工業的には軟鋼と組み合わせて磁気空げきを有する磁気回路にして用いられる。最も簡単な磁気回路として，着磁されたリング状磁石（図 2.2.1）によってその空隙に磁界を作る場合を考えよう。漏れ磁束はないと仮定する。電流はないのでマックスウェルの方程式の一つであるアンペアの貫流則は

$$\int H \cdot ds = 0 \tag{2.7}$$

となる。磁石中の磁界は空げき磁界と逆の符号をとると約束して，式(2.7)をこの磁気回路に適用する第1の基礎方程式として

$$H_g L_g = H_m L_m \tag{2.8}$$

をうる。ここで，H_g＝空げきの磁界，H_m＝磁石中の減磁界，L_g＝空げきの長さ，L_m＝磁石の長さである。以下，g，m という添字は同じように使用す

2) Sub-clause 3.2 に述べられている付加的な磁気特性の代表値
T_c ＝approx. 1 000K
$\alpha(Br) = -0.045\%/K$
$\alpha(H_cJ) = -0.3\%/K$ } 273～373K の温度区間
3) 代表的な組成は MMCos (MM はセリウム系ミッシュメタル)
4) 代表的な組成は SmCos
5) 代表的な組成は (SmPr)Cos
6) 表記の材料は単なる例示で，急速な開発の下でその他の材料が出現する。

JIS使い方シリーズ
磁性材料選択のポイント

定価3,600円
(本体3,495円)

1989年11月10日　第1版第1刷発行

権利者との協定により検印省略

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XI. Related Proceedings Appendix (37 CFR § 41.37(c)(2))

None